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<120> COMPOSITIONS AND METHODS FOR DIAGNOSTICS AND THERAPEUTICS FOR
HYDROCEPHALUS

<130> 4239-64828

<150> 60/374,184

<151> 2002-04-19

<150> 60/388,266

<151> 2002-06-13

<160> 39

<170> PatentIn version 3.2

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Asn Glu Glu Lys Glu Asn Asn Arg Ala Ser Lys Pro His Ser Thr Pro
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tac acc atg gaa gac tct cgc gat gag cac cgg aaa ctc atc acc caa Tyr Thr Met Glu Asp Ser Arg Asp Glu His Arg Lys Leu Ile Thr Gln 375 380 385	1269
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Ser Asn Asp Glu Asn Glu Glu Lys Glu Asn Asn Arg Ala Ser Lys Pro			
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His Ser Thr Pro Ala Thr Leu Gln Trp Leu Glu Glu Asn Tyr Glu Ile			
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Ala Glu Gly Val Cys Ile Pro Arg Ser Ala Leu Tyr Met His Tyr Leu			
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Asp Phe Cys Glu Lys Asn Asp Thr Gln Pro Val Asn Ala Ala Ser Phe			
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Gly Lys Ile Ile Arg Gln Gln Phe Pro Gln Leu Thr Thr Arg Arg Leu			
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Gly Thr Arg Gly Gln Ser Lys Tyr His Tyr Tyr Gly Ile Ala Val Lys			
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Glu Ser Ser Gln Tyr Tyr Asp Val Met Tyr Ser Lys Lys Gly Ala Ala			
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Trp Val Ser Glu Thr Gly Lys Lys Glu Val Ser Lys Gln Thr Val Ala
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180 185 190

Val Lys Asp Leu Asn Leu Pro Ala Ser Leu Pro Glu Glu Lys Val Ser
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Val Ile Arg Ala Asn Phe Asp Glu Val Gln Ser Phe Leu Leu His Phe
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Trp Gln Gly Met Pro Pro His Met Leu Pro Val Leu Gly Ser Ser Thr
245 250 255

Val Val Asn Ile Val Gly Val Cys Asp Ser Ile Leu Tyr Lys Ala Ile
260 265 270

Ser Gly Val Leu Met Pro Thr Val Leu Gln Ala Leu Pro Asp Ser Leu
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Thr Gln Val Ile Arg Lys Phe Ala Lys Gln Leu Asp Glu Trp Leu Lys
290 295 300

Val Ala Leu His Asp Leu Pro Glu Asn Leu Arg Asn Ile Lys Phe Glu
305 310 315 320

Leu Ser Arg Arg Phe Ser Gln Ile Leu Arg Arg Gln Thr Ser Leu Asn
325 330 335

His Leu Cys Gln Ala Ser Arg Thr Val Ile His Ser Ala Asp Ile Thr
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Phe Gln Met Leu Glu Asp Trp Arg Asn Val Asp Leu Asn Ser Ile Thr
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Lys Gln Thr Leu Tyr Thr Met Glu Asp Ser Arg Asp Glu His Arg Lys
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Leu Ile Thr Gln Leu Tyr Gln Glu Phe Asp His Leu Leu Glu Glu Gln
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Ser Pro Ile Glu Ser Tyr Ile Glu Trp Leu Asp Thr Met Val Asp Arg

405

410

415

Cys Val Val Lys Val Ala Ala Lys Arg Gln Gly Ser Leu Lys Lys Val
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Ala Gln Gln Phe Leu Leu Met Trp Ser Cys Phe Gly Thr Arg Val Ile
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Arg Asp Met Thr Leu His Ser Ala Pro Ser Phe Gly Ser Phe His Leu
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Ile His Leu Met Phe Asp Asp Tyr Val Leu Tyr Leu Leu Glu Ser Leu
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His Cys Gln Glu Arg Ala Asn Glu Leu Met Arg Ala Met Lys Gly Glu
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Gly Ser Thr Ala Glu Val Arg Glu Glu Ile Ile Leu Thr Glu Ala Ala
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Met Asn Trp
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Asp Ser Arg Cys Pro Leu Ser Arg Asn Ile Thr Glu Trp Tyr His Tyr			
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tat ggc att gca gtg aaa gaa agc tcc caa tat tat gat gtg atg tat			262
Tyr Gly Ile Ala Val Lys Glu Ser Ser Gln Tyr Tyr Asp Val Met Tyr			
40	45	50	
tcc aag aaa gga gct gcc tgg gtg agt gag acg ggc aag aaa gaa gtg			310
Ser Lys Lys Gly Ala Ala Trp Val Ser Glu Thr Gly Lys Lys Glu Val			
55	60	65	
agc aaa cag aca gtg gca tat tca ccc cgg tcc aaa ctc gga aca ctg			358
Ser Lys Gln Thr Val Ala Tyr Ser Pro Arg Ser Lys Leu Gly Thr Leu			
70	75	80	
ctg cca gaa ttt ccc aat gtc aaa gat cta aat ctg cca gcc agc ctg			406
Leu Pro Glu Phe Pro Asn Val Lys Asp Leu Asn Leu Pro Ala Ser Leu			
85	90	95	
cct gag gag aag gtt tct acc ttt att atg atg tac aga aca cac tgt			454
Pro Glu Glu Lys Val Ser Thr Phe Ile Met Met Tyr Arg Thr His Cys			
100	105	110	115
cag aga ata ctg gac act gta ata aga gcc aac ttt gat gag gtt caa			502
Gln Arg Ile Leu Asp Thr Val Ile Arg Ala Asn Phe Asp Glu Val Gln			
120	125	130	
agt ttc ctt ctg cac ttt tgg caa gga atg ccc cac atg ctg cct			550
Ser Phe Leu Leu His Phe Trp Gln Gly Met Pro Pro His Met Leu Pro			
135	140	145	
gtg ctg ggc tcc acg gtg gtg aac att gtc ggc gtg tgt gac tcc			598
Val Leu Gly Ser Ser Thr Val Val Asn Ile Val Gly Val Cys Asp Ser			
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atc ctc tac aaa gct atc tcc ggg gtg ctg atg ccc act gtg ctg cag			646
Ile Leu Tyr Lys Ala Ile Ser Gly Val Leu Met Pro Thr Val Leu Gln			
165	170	175	
gca tta cct gac agc tta act cag gtg att cga aag ttt gcc aag caa			694
Ala Leu Pro Asp Ser Leu Thr Gln Val Ile Arg Lys Phe Ala Lys Gln			
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ctg gat gag tgg cta aaa gtg gct ctc cac gac ctc cca gaa aac ttg			742
Leu Asp Glu Trp Leu Lys Val Ala Leu His Asp Leu Pro Glu Asn Leu			
200	205	210	
cga aac atc aag ttc gaa ttg tcg aga agg ttc tcc caa att ctg aga			790
Arg Asn Ile Lys Phe Glu Leu Ser Arg Arg Phe Ser Gln Ile Leu Arg			
215	220	225	
cgg caa aca tca cta aat cat ctc tgc cag gca tct cga aca gtg atc			838
Arg Gln Thr Ser Leu Asn His Leu Cys Gln Ala Ser Arg Thr Val Ile			
230	235	240	
cac agt gca gac atc acg ttc caa atg ctg gaa gac tgg agg aac gtg			886
His Ser Ala Asp Ile Thr Phe Gln Met Leu Glu Asp Trp Arg Asn Val			

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gac ctg aac agc atc acc aag caa acc ctt tac acc atg gaa gac tct Asp Leu Asn Ser Ile Thr Lys Gln Thr Leu Tyr Thr Met Glu Asp Ser	260	265	934
270	275		
cgc gat gag cac cg ^g aaa ctc atc acc caa tta tat cag gag ttt gac Arg Asp Glu His Arg Lys Leu Ile Thr Gln Leu Tyr Gln Glu Phe Asp	280	285	982
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cat ctc ttg gag gag cag tct ccc atc gag tcc tac att gag tgg ctg His Leu Leu Glu Glu Gln Ser Pro Ile Glu Ser Tyr Ile Glu Trp Leu	295	300	1030
295	300	305	
gat acc atg gtt gac cgc tgt gtt gtg aag gtg gct gcc aag aga cga Asp Thr Met Val Asp Arg Cys Val Val Lys Val Ala Ala Lys Arg Arg	310	315	1078
310	315	320	
ggg tcc ttg aag aaa gtg gcc cag cag ttc ctc ttg atg tgg tcc tgt Gly Ser Leu Lys Lys Val Ala Gln Gln Phe Leu Leu Met Trp Ser Cys	325	330	1126
325	330	335	
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340	345	350	355
ttc ggg tct ttt cac cta att cac tta atg ttt gat gac tac gtg ctc Phe Gly Ser Phe His Leu Ile His Leu Met Phe Asp Asp Tyr Val Leu	360	365	1222
360	365	370	
tac ctg tta gaa tct ctg cac tgt cag gag cgg gcc aat gag ctc atg Tyr Leu Leu Glu Ser Leu His Cys Gln Glu Arg Ala Asn Glu Leu Met	375	380	1270
375	380	385	
cga gcc atg aag gga gaa gga agc act gca gaa gtc cga gaa gag atc Arg Ala Met Lys Gly Glu Gly Ser Thr Ala Glu Val Arg Glu Glu Ile	390	395	1318
390	395	400	
atc ttg aca gag gct gcc gca cca acc cct tca cca gtg cca tcg ttt Ile Leu Thr Glu Ala Ala Pro Thr Pro Ser Pro Val Pro Ser Phe	405	410	1366
405	410	415	
tct cca gca aaa tct gcc aca tct gtg gaa gtg cca cct ccc tct tcc Ser Pro Ala Lys Ser Ala Thr Ser Val Glu Val Pro Pro Pro Ser Ser	420	425	1414
420	425	430	435
cct gtt agc aat cct tcc cct gag tac act ggc ctc agc act aca gga Pro Val Ser Asn Pro Ser Pro Glu Tyr Thr Gly Leu Ser Thr Thr Gly	440	445	1462
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455	460	465	
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470	475	480	
act cac gtg cct tct tcc tcc gtc aca cac agg ata cca gtt tat ccc Thr His Val Pro Ser Ser Ser Val Thr His Arg Ile Pro Val Tyr Pro	485	490	1606
485	490	495	

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Lys Glu Val Ser Lys Gln Thr Val Ala Tyr Ser Pro Arg Ser Lys Leu			
65	70	75	80

Gly Thr Leu Leu Pro Glu Phe Pro Asn Val Lys Asp Leu Asn Leu Pro		
85	90	95

Ala Ser Leu Pro Glu Glu Lys Val Ser Thr Phe Ile Met Met Tyr Arg		
100	105	110

Thr His Cys Gln Arg Ile Leu Asp Thr Val Ile Arg Ala Asn Phe Asp		
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Met Leu Pro Val Leu Gly Ser Ser Thr Val Val Asn Ile Val Gly Val
145 150 155 160

Cys Asp Ser Ile Leu Tyr Lys Ala Ile Ser Gly Val Leu Met Pro Thr
165 170 175

Val Leu Gln Ala Leu Pro Asp Ser Leu Thr Gln Val Ile Arg Lys Phe
180 185 190

Ala Lys Gln Leu Asp Glu Trp Leu Lys Val Ala Leu His Asp Leu Pro
195 200 205

Glu Asn Leu Arg Asn Ile Lys Phe Glu Leu Ser Arg Arg Phe Ser Gln
210 215 220

Ile Leu Arg Arg Gln Thr Ser Leu Asn His Leu Cys Gln Ala Ser Arg
225 230 235 240

Thr Val Ile His Ser Ala Asp Ile Thr Phe Gln Met Leu Glu Asp Trp
245 250 255

Arg Asn Val Asp Leu Asn Ser Ile Thr Lys Gln Thr Leu Tyr Thr Met
260 265 270

Glu Asp Ser Arg Asp Glu His Arg Lys Leu Ile Thr Gln Leu Tyr Gln
275 280 285

Glu Phe Asp His Leu Leu Glu Glu Gln Ser Pro Ile Glu Ser Tyr Ile
290 295 300

Glu Trp Leu Asp Thr Met Val Asp Arg Cys Val Val Lys Val Ala Ala
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Lys Arg Arg Gly Ser Leu Lys Lys Val Ala Gln Gln Phe Leu Leu Met
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Trp Ser Cys Phe Gly Thr Arg Val Ile Arg Asp Met Thr Leu His Ser
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Tyr Val Leu Tyr Leu Leu Glu Ser Leu His Cys Gln Glu Arg Ala Asn
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Glu Leu Met Arg Ala Met Lys Gly Glu Gly Ser Thr Ala Glu Val Arg
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Glu Glu Ile Ile Leu Thr Glu Ala Ala Ala Pro Thr Pro Ser Pro Val
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Pro Ser Phe Ser Pro Ala Lys Ser Ala Thr Ser Val Glu Val Pro Pro
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Pro Ser Ser Pro Val Ser Asn Pro Ser Pro Glu Tyr Thr Gly Leu Ser
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Val Tyr Pro His Arg Glu Glu His Gly Tyr Thr Gly Ser Tyr Asn Tyr
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Ala Leu Pro His Asp Thr Ala Ile Ser Gly Pro Leu His Tyr Ala Pro
530 535 540

Tyr His Arg Ser Ser Ala Gln Tyr Pro Phe Asn Ser Pro Thr Ser Arg
545 550 555 560

Met Glu Pro Cys Leu Met Ser Ser Thr Pro Arg Leu His Pro Thr Pro
565 570 575

Val Thr Pro Arg Trp Pro Glu Val Pro Ser Ala Asn Thr Cys Tyr Thr
580 585 590

Asn Pro Ser Val His Ser Ala Arg Tyr Gly Asn Ser Ser Asp Met Tyr
595 600 605

Thr Pro Leu Thr Thr Arg Arg Asn Ser Glu Tyr Glu His Met Gln His

610

615

620

Phe Pro Gly Phe Ala Tyr Ile Asn Gly Glu Ala Ser Thr Gly Trp Ala
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Lys

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cttccacta gttcttctt ttccccctt atccctttgc cctctcaccc accgtctccc 180
cctctcttc tcgctatccc ttccttcctt atttcttccc tcccttcctc cctgggcata 240
tctagcacag gggatccccaa aatatcagga cttttggggg gcgtctgtgc tgtccatggg 300
aagagc atg cat tgt ggg tta ctg gag gaa ccc gac atg gat tcc aca 348
Met His Cys Gly Leu Leu Glu Glu Pro Asp Met Asp Ser Thr
1 5 10
gag agc tgg att gaa aga tgt ctc aat gaa agc gag aat aaa cgc tat 396
Glu Ser Trp Ile Glu Arg Cys Leu Asn Glu Ser Glu Asn Lys Arg Tyr
15 20 25 30
tcc agt cac aca tct ctg ggg aat gtg tct aat gat gaa aat gag gaa 444
Ser Ser His Thr Ser Leu Gly Asn Val Ser Asn Asp Glu Asn Glu Glu
35 40 45
aaa gaa aat aac aga gca tcc aag ccc cac tcc acg ccg gcc acc ctg 492
Lys Glu Asn Asn Arg Ala Ser Lys Pro His Ser Thr Pro Ala Thr Leu
50 55 60
caa tgg ctg gag gaa aac tat gag att gct gag ggc gtc tgc atc ccc 540
Gln Trp Leu Glu Glu Asn Tyr Glu Ile Ala Glu Gly Val Cys Ile Pro
65 70 75
cgc agc gcc ctc tac atg cac tac ctg gat ttc tgt gag aag aac gac 588
Arg Ser Ala Leu Tyr Met His Tyr Leu Asp Phe Cys Glu Lys Asn Asp
80 85 90
act cag cct gtc aat gct gcc agc ttt ggg aag atc ata agg cag cag 636
Thr Gln Pro Val Asn Ala Ala Ser Phe Gly Lys Ile Ile Arg Gln Gln
95 100 105 110
ttt cct cag cta acc acc aga aga ctc ggg acc ggg acc cga gga cag 684

Phe Pro Gln Leu Thr Thr Arg Arg Leu Gly Thr Gly Thr Arg Gly Gln			
115	120	125	
tca aag tac cat tac tat ggc ata gcg gtg aag gag agc tcc cag tat		732	
Ser Lys Tyr His Tyr Gly Ile Ala Val Lys Glu Ser Ser Gln Tyr			
130	135	140	
tat gat gtg atg tac tca aag aaa gga gct gcc tgg gtg agc gag acg		780	
Tyr Asp Val Met Tyr Ser Lys Lys Gly Ala Ala Trp Val Ser Glu Thr			
145	150	155	
ggc aag aga gaa gtc acc aag cag acg gtg gca tat tct ccc cggtcc		828	
Gly Lys Arg Glu Val Thr Lys Gln Thr Val Ala Tyr Ser Pro Arg Ser			
160	165	170	
aag ctt ggg aca ttg ctg cca gac ttt cca aac gtc aaa gac cta aat		876	
Lys Leu Gly Thr Leu Leu Pro Asp Phe Pro Asn Val Lys Asp Leu Asn			
175	180	185	190
ctg cca gcc agt ctt cct gag gag aag gtg tct acc ttt att atg atg		924	
Leu Pro Ala Ser Leu Pro Glu Glu Lys Val Ser Thr Phe Ile Met Met			
195	200	205	
tac aga aca cac tgt cag aga ata ctg gac act gta ata aga gcc aac		972	
Tyr Arg Thr His Cys Gln Arg Ile Leu Asp Thr Val Ile Arg Ala Asn			
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ttt gat gag gtt caa agt ttc ctt ctg cac ttt tgg caa ggg atg ccg		1020	
Phe Asp Glu Val Gln Ser Phe Leu Leu His Phe Trp Gln Gly Met Pro			
225	230	235	
,			
ccc cac atg ctg ccc gtg cta ggc tcc tcc acg gtg gtg aac atc gtg		1068	
Pro His Met Leu Pro Val Leu Gly Ser Ser Thr Val Val Asn Ile Val			
240	245	250	
ggt gtg tgt gac tcc atc ctc tac aaa gcc atc tcc ggt gtg ttg atg		1116	
Gly Val Cys Asp Ser Ile Leu Tyr Lys Ala Ile Ser Gly Val Leu Met			
255	260	265	270
ccc acg gtg ctg cag gcg ttg ccg gac agc tta act cag gtg atc cga		1164	
Pro Thr Val Leu Gln Ala Leu Pro Asp Ser Leu Thr Gln Val Ile Arg			
275	280	285	
aag ttt gcc aag cag ctg gac gag tgg ctg aaa gtg gct ctc cac gat		1212	
Lys Phe Ala Lys Gln Leu Asp Glu Trp Leu Lys Val Ala Leu His Asp			
290	295	300	
ctc ccg gaa aac ctg aga aac atc aaa ttt gaa tta tca agg agg ttt		1260	
Leu Pro Glu Asn Leu Arg Asn Ile Lys Phe Glu Leu Ser Arg Arg Phe			
305	310	315	
tcc caa atc cta agg agg caa aca tcg ctg aac cat ctg tgc cag gca		1308	
Ser Gln Ile Leu Arg Arg Gln Thr Ser Leu Asn His Leu Cys Gln Ala			
320	325	330	
tct cga acg gtg atc cac agt gca gac atc acg ttc cag atg ctg gag		1356	
Ser Arg Thr Val Ile His Ser Ala Asp Ile Thr Phe Gln Met Leu Glu			
335	340	345	350
gac tgg agg aat gtg gac ctg agt agc atc acc aag cag act ctg tat		1404	
Asp Trp Arg Asn Val Asp Leu Ser Ser Ile Thr Lys Gln Thr Leu Tyr			

355	360	365	
acc atg gag gac tct cgg gat gag cac cgc aga ctc atc atc cag ttg Thr Met Glu Asp Ser Arg Asp Glu His Arg Arg Leu Ile Ile Gln Leu 370	375	380	1452
tac cag gag ttt gac cac ctg ctg gag gaa cag tcc ccc atc gag tct Tyr Gln Glu Phe Asp His Leu Leu Glu Glu Gln Ser Pro Ile Glu Ser 385	390	395	1500
tac ata gaa tgg ctg gat acc atg gta gac cga tgc gtt gta aag gtg Tyr Ile Glu Trp Leu Asp Thr Met Val Asp Arg Cys Val Val Lys Val 400	405	410	1548
gct gcc aag aga caa ggg tct ctg aag aaa gta gcc caa cag ttc ctg Ala Ala Lys Arg Gln Gly Ser Leu Lys Lys Val Ala Gln Gln Phe Leu 415	420	425	1596
ctg atg tgg tct tgc ttt ggt acg agg gtg atc cgg gac atg acc ttc Leu Met Trp Ser Cys Phe Gly Thr Arg Val Ile Arg Asp Met Thr Leu 435	440	445	1644
cac agt gcc ccc agc ttc ggg tct ttt cac ctg att cac ctg atg ttc His Ser Ala Pro Ser Phe Gly Ser Phe His Leu Ile His Leu Met Phe 450	455	460	1692
gac gac tac gtg ctc tac ttg cta gaa tct ctg cat tgt cag gag cgg Asp Asp Tyr Val Leu Tyr Leu Leu Glu Ser Leu His Cys Gln Glu Arg 465	470	475	1740
gcc aac gag ctc atg cga gcc atg aaa gga gaa gga agc act gca gaa Ala Asn Glu Leu Met Arg Ala Met Lys Gly Glu Gly Ser Thr Ala Glu 480	485	490	1788
gcc cag gaa gag att atc ttg aca gag gct acc cca cca acc cct tca Ala Gln Glu Glu Ile Ile Leu Thr Glu Ala Thr Pro Pro Thr Pro Ser 495	500	505	1836
cct ggt cca tca ttt tct cca gca aag tct gcc aca tct gtg gag gtg Pro Gly Pro Ser Phe Ser Pro Ala Lys Ser Ala Thr Ser Val Glu Val 515	520	525	1884
cca cct ccc tcc tcc cct gtc agc aac cca tcc ccc gaa tac act ggc Pro Pro Pro Ser Ser Pro Val Ser Asn Pro Ser Pro Glu Tyr Thr Gly 530	535	540	1932
ctt agc aca gca gga gcg atg cag tca tat acg tgg tcg cta aca tat Leu Ser Thr Ala Gly Ala Met Gln Ser Tyr Thr Trp Ser Leu Thr Tyr 545	550	555	1980
aca gta aca acg gct gca ggg tca ccg gct gag aac tcc caa caa cta Thr Val Thr Ala Ala Gly Ser Pro Ala Glu Asn Ser Gln Gln Leu 560	565	570	2028
ccc tgt atg agg agc acc cat atg cct tct tcc tcc gtc aca cac agg Pro Cys Met Arg Ser Thr His Met Pro Ser Ser Ser Val Thr His Arg 575	580	585	2076
ata cca gtc tac tcc cac aga gag gag cat ggg tac acg gga agc tat Ile Pro Val Tyr Ser His Arg Glu Glu His Gly Tyr Thr Gly Ser Tyr 595	600	605	2124

aac tac ggg agc tat ggc aac cag cat cct cac cca ctg cag aac cag Asn Tyr Gly Ser Tyr Gly Asn Gln His Pro His Pro Leu Gln Asn Gln 610 615 620	2172
tat cca gcc ttg cct cat gac aca gcc atc tct ggg cct ctc cac tat Tyr Pro Ala Leu Pro His Asp Thr Ala Ile Ser Gly Pro Leu His Tyr 625 630 635	2220
tcc cct tac cac agg agc tct gcc cag tac cct ttc aat agc ccc act Ser Pro Tyr His Arg Ser Ser Ala Gln Tyr Pro Phe Asn Ser Pro Thr 640 645 650	2268
tcc agg atg gaa cct tgt ttg atg agc agt act ccc agg ctg cat cct Ser Arg Met Glu Pro Cys Leu Met Ser Ser Thr Pro Arg Leu His Pro 655 660 665 670	2316
acc cca gtg act ccc cga tgg cca gag gtg ccg act gcc aac gca tgc Thr Pro Val Thr Pro Arg Trp Pro Glu Val Pro Thr Ala Asn' Ala Cys 675 680 685	2364
tac aca agc cca tct gtg cat tcc acg agg tat gga aac tct agt gac Tyr Thr Ser Pro Ser Val His Ser Thr Arg Tyr Gly Asn Ser Ser Asp 690 695 700	2412
atg tac acc ccg ctg acc acg cgc agg aat tct gag tat gag cac atg Met Tyr Thr Pro Leu Thr Thr Arg Arg Asn Ser Glu Tyr Glu His Met 705 710 715	2460
caa cac ttt cct ggc ttt gct tac atc aac gga gag gcc tcc act gga Gln His Phe Pro Gly Phe Ala Tyr Ile Asn Gly Glu Ala Ser Thr Gly 720 725 730	2508
tgg gct aag tga ctgctttcat agaaaatccat atttaatatt aataattaat Trp Ala Lys 735	2560
aataataata aacccagtac ccaccctcca gaagacttta tttcaataca tcataacttg cgggctgacc taagcatcca ttctcctaatac gaacaagagg atgttcaatg tggagtgaat agacttttagt tcagaaacag gagtcactaa aagtcatgtt gattgggttt ctgttagccaa gccagacttg actgtttcta tagagacta tcttggcag gccaatctgt gcctttcccc tctgttccat gaccttgcattt ggcaactact ccttgtatag gg	2620 2680 2740 2800 2842

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Trp Ile Glu Arg Cys Leu Asn Glu Ser Glu Asn Lys Arg Tyr Ser Ser
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His Thr Ser Leu Gly Asn Val Ser Asn Asp Glu Asn Glu Glu Lys Glu
35 40 45

Asn Asn Arg Ala Ser Lys Pro His Ser Thr Pro Ala Thr Leu Gln Trp
50 55 60

Leu Glu Glu Asn Tyr Glu Ile Ala Glu Gly Val Cys Ile Pro Arg Ser
65 70 75 80

Ala Leu Tyr Met His Tyr Leu Asp Phe Cys Glu Lys Asn Asp Thr Gln
85 90 95

Pro Val Asn Ala Ala Ser Phe Gly Lys Ile Ile Arg Gln Gln Phe Pro
100 105 110

Gln Leu Thr Thr Arg Arg Leu Gly Thr Gly Thr Arg Gly Gln Ser Lys
115 120 125

Tyr His Tyr Tyr Gly Ile Ala Val Lys Glu Ser Ser Gln Tyr Tyr Asp
130 135 140

Val Met Tyr Ser Lys Lys Gly Ala Ala Trp Val Ser Glu Thr Gly Lys
145 150 155 160

Arg Glu Val Thr Lys Gln Thr Val Ala Tyr Ser Pro Arg Ser Lys Leu
165 170 175

Gly Thr Leu Leu Pro Asp Phe Pro Asn Val Lys Asp Leu Asn Leu Pro
180 185 190

Ala Ser Leu Pro Glu Glu Lys Val Ser Thr Phe Ile Met Met Tyr Arg
195 200 205

Thr His Cys Gln Arg Ile Leu Asp Thr Val Ile Arg Ala Asn Phe Asp
210 215 220

Glu Val Gln Ser Phe Leu Leu His Phe Trp Gln Gly Met Pro Pro His
225 230 235 240

Met Leu Pro Val Leu Gly Ser Ser Thr Val Val Asn Ile Val Gly Val
245 250 255

Cys Asp Ser Ile Leu Tyr Lys Ala Ile Ser Gly Val Leu Met Pro Thr
260 265 270

Val Leu Gln Ala Leu Pro Asp Ser Leu Thr Gln Val Ile Arg Lys Phe
275 280 285

Ala Lys Gln Leu Asp Glu Trp Leu Lys Val Ala Leu His Asp Leu Pro
290 295 300

Glu Asn Leu Arg Asn Ile Lys Phe Glu Leu Ser Arg Arg Phe Ser Gln
305 310 315 320

Ile Leu Arg Arg Gln Thr Ser Leu Asn His Leu Cys Gln Ala Ser Arg
325 330 335

Thr Val Ile His Ser Ala Asp Ile Thr Phe Gln Met Leu Glu Asp Trp
340 345 350

Arg Asn Val Asp Leu Ser Ser Ile Thr Lys Gln Thr Leu Tyr Thr Met
355 360 365

Glu Asp Ser Arg Asp Glu His Arg Arg Leu Ile Ile Gln Leu Tyr Gln
370 375 380

Glu Phe Asp His Leu Leu Glu Glu Gln Ser Pro Ile Glu Ser Tyr Ile
385 390 395 400

Glu Trp Leu Asp Thr Met Val Asp Arg Cys Val Val Lys Val Ala Ala
405 410 415

Lys Arg Gln Gly Ser Leu Lys Lys Val Ala Gln Gln Phe Leu Leu Met
420 425 430

Trp Ser Cys Phe Gly Thr Arg Val Ile Arg Asp Met Thr Leu His Ser
435 440 445

Ala Pro Ser Phe Gly Ser Phe His Leu Ile His Leu Met Phe Asp Asp
450 455 460

Tyr Val Leu Tyr Leu Leu Glu Ser Leu His Cys Gln Glu Arg Ala Asn
465 470 475 480

Glu Leu Met Arg Ala Met Lys Gly Glu Gly Ser Thr Ala Glu Ala Gln
485 490 495

Glu Glu Ile Ile Leu Thr Glu Ala Thr Pro Pro Thr Pro Ser Pro Gly
500 505 510

Pro Ser Phe Ser Pro Ala Lys Ser Ala Thr Ser Val Glu Val Pro Pro
515 520 525

Pro Ser Ser Pro Val Ser Asn Pro Ser Pro Glu Tyr Thr Gly Leu Ser
530 535 540

Thr Ala Gly Ala Met Gln Ser Tyr Thr Trp Ser Leu Thr Tyr Thr Val
545 550 555 560

Thr Thr Ala Ala Gly Ser Pro Ala Glu Asn Ser Gln Gln Leu Pro Cys
565 570 575

Met Arg Ser Thr His Met Pro Ser Ser Ser Val Thr His Arg Ile Pro
580 585 590

Val Tyr Ser His Arg Glu Glu His Gly Tyr Thr Gly Ser Tyr Asn Tyr
595 600 605

Gly Ser Tyr Gly Asn Gln His Pro His Pro Leu Gln Asn Gln Tyr Pro
610 615 620

Ala Leu Pro His Asp Thr Ala Ile Ser Gly Pro Leu His Tyr Ser Pro
625 630 635 640

Tyr His Arg Ser Ser Ala Gln Tyr Pro Phe Asn Ser Pro Thr Ser Arg
645 650 655

Met Glu Pro Cys Leu Met Ser Ser Thr Pro Arg Leu His Pro Thr Pro
660 665 670

Val Thr Pro Arg Trp Pro Glu Val Pro Thr Ala Asn Ala Cys Tyr Thr
675 680 685

Ser Pro Ser Val His Ser Thr Arg Tyr Gly Asn Ser Ser Asp Met Tyr
690 695 700

Thr Pro Leu Thr Thr Arg Arg Asn Ser Glu Tyr Glu His Met Gln His
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Lys

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 Met His Cys Gly Leu Leu Glu Glu Pro Asp Met Asp Ser Thr
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 Glu Ser Trp Ile Glu Arg Cys Leu Asn Glu Ser Glu Asn Lys Arg Tyr
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tcc agc cac aca tct ctg ggg aat gtt tct aat gat gaa aat gag gaa 205
 Ser Ser His Thr Ser Leu Gly Asn Val Ser Asn Asp Glu Asn Glu Glu
 35 40 45

aaa gaa aat aat aga gca tcc aag ccc cac tcc act cct gct act ctg 253
 Lys Glu Asn Asn Arg Ala Ser Lys Pro His Ser Thr Pro Ala Thr Leu
 50 55 60

caa tgg ctg gag gag aac tat gag att gca gag ggg gtc tgc atc cct 301
 Gln Trp Leu Glu Glu Asn Tyr Glu Ile Ala Glu Gly Val Cys Ile Pro
 65 70 75

cgc agt gcc ctc tat atg cat tac ctg gat ttc tgc gag aag aat gat 349
 Arg Ser Ala Leu Tyr Met His Tyr Leu Asp Phe Cys Glu Lys Asn Asp
 80 85 90

acc caa cct gtc aat gct gcc agc ttt gga aag atc ata agg cag cag 397
 Thr Gln Pro Val Asn Ala Ala Ser Phe Gly Lys Ile Ile Arg Gln Gln
 95 100 105 110

ttt cct cag tta acc acc aga ctc ggg acc cga gga cag tca aag 445
 Phe Pro Gln Leu Thr Thr Arg Arg Leu Gly Thr Arg Gly Gln Ser Lys
 115 120 125

tac cat tac tat ggc att gca gtg aaa gaa agc tcccaa tat tat gat 493
 Tyr His Tyr Tyr Gly Ile Ala Val Lys Glu Ser Ser Gln Tyr Tyr Asp
 130 135 140

gtg atg tat tcc aag aaa gga gct gcc tgg gtg agt gag acg ggc aag 541
 Val Met Tyr Ser Lys Lys Gly Ala Ala Trp Val Ser Glu Thr Gly Lys
 145 150 155

aaa gaa gtg agc aaa cag aca gtg gca tat tca ccc cgg tcc aaa ctc 589
 Lys Glu Val Ser Lys Gln Thr Val Ala Tyr Ser Pro Arg Ser Lys Leu
 160 165 170

gga aca ctg ctg cca gaa ttt ccc aat gtc aaa gat cta aat ctg cca 637
 Gly Thr Leu Leu Pro Glu Phe Pro Asn Val Lys Asp Leu Asn Leu Pro
 175 180 185 190

gcc agc ctg cct gag gag aag gtt tct acc ttt att atg atg tac aga 685

Ala Ser Leu Pro Glu Glu Lys Val Ser Thr Phe Ile Met Met Tyr Arg			
195	200	205	
aca cac tgt cag aga ata ctg gac act gta ata aga gcc aac ttt gat			733
Thr His Cys Gln Arg Ile Leu Asp Thr Val Ile Arg Ala Asn Phe Asp			
210	215	220	
gag gtt caa agt ttc ctt ctg cac ttt tgg caa gga atg ccg ccc cac			781
Glu Val Gln Ser Phe Leu Leu His Phe Trp Gln Gly Met Pro Pro His			
225	230	235	
atg ctg cct gtg ctg ggc tcc tcc acg gtg gtg aac att gtc ggc gtg			829
Met Leu Pro Val Leu Gly Ser Ser Thr Val Val Asn Ile Val Gly Val			
240	245	250	
tgt gac tcc atc ctc tac aaa gct atc tcc ggg gtg ctg atg ccc act			877
Cys Asp Ser Ile Leu Tyr Lys Ala Ile Ser Gly Val Leu Met Pro Thr			
255	260	265	270
gtg ctg cag gca tta cct gac agc tta act cag gtg att cga aag ttt			925
Val Leu Gln Ala Leu Pro Asp Ser Leu Thr Gln Val Ile Arg Lys Phe			
275	280	285	
gcc aag caa ctg gat gag tgg cta aaa gtg gct ctc cac gac ctc cca			973
Ala Lys Gln Leu Asp Glu Trp Leu Lys Val Ala Leu His Asp Leu Pro			
290	295	300	
gaa aac ttg cga aac atc aag ttc gaa ttg tcg aga agg ttc tcc caa			1021
Glu Asn Leu Arg Asn Ile Lys Phe Glu Leu Ser Arg Arg Phe Ser Gln			
305	310	315	
att ctg aga cgg caa aca tca cta aat cat ctc tgc cag gca tct cga			1069
Ile Leu Arg Arg Gln Thr Ser Leu Asn His Leu Cys Gln Ala Ser Arg			
320	325	330	
aca gtg atc cac agt gca gac atc acg ttc caa atg ctg gaa gac tgg			1117
Thr Val Ile His Ser Ala Asp Ile Thr Phe Gln Met Leu Glu Asp Trp			
335	340	345	350
agg aac gtg gac ctg aac agc atc acc aag caa acc ctt tac acc atg			1165
Arg Asn Val Asp Leu Asn Ser Ile Thr Lys Gln Thr Leu Tyr Thr Met			
355	360	365	
gaa gac tct cgc gat gag cac cgg aaa ctc atc acc caa tta tat cag			1213
Glu Asp Ser Arg Asp Glu His Arg Lys Leu Ile Thr Gln Leu Tyr Gln			
370	375	380	
gag ttt gac cat ctc ttg gag gag cag tct ccc atc gag tcc tac att			1261
Glu Phe Asp His Leu Leu Glu Glu Gln Ser Pro Ile Glu Ser Tyr Ile			
385	390	395	
gag tgg ctg gat acc atg gtt gac cgc tgt gtt gtg aag gtg gct gcc			1309
Glu Trp Leu Asp Thr Met Val Asp Arg Cys Val Val Lys Val Ala Ala			
400	405	410	
aag aga caa ggg tcc ttg aag aaa gtg gcc cag cag ttc ctc ttg atg			1357
Lys Arg Gln Gly Ser Leu Lys Val Ala Gln Gln Phe Leu Leu Met			
415	420	425	430
tgg tcc tgt ttc ggc aca agg gtg atc cgg gac atg acc ttg cac agc			1405
Trp Ser Cys Phe Gly Thr Arg Val Ile Arg Asp Met Thr Leu His Ser			

435	440	445	
gcc ccc agc ttc ggg tct ttt cac cta att cac tta atg ttt gat gac Ala Pro Ser Phe Gly Ser Phe His Leu Ile His Leu Met Phe Asp Asp			1453
450	455	460	
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465	470	475	
gag ctc atg cga gcc atg aag gga gaa gga agc act gca gaa gtc cga Glu Leu Met Arg Ala Met Lys Gly Glu Gly Ser Thr Ala Glu Val Arg			1549
480	485	490	
gaa gag atc atc ttg aca gag gct gcc gca cca acc cct tca cca gtg Glu Glu Ile Ile Leu Thr Glu Ala Ala Ala Pro Thr Pro Ser Pro Val			1597
495	500	505	510
cca tcg ttt tct cca gca aaa tct gcc aca tct atg gaa gtg cca cct Pro Ser Phe Ser Pro Ala Lys Ser Ala Thr Ser Met Glu Val Pro Pro			1645
515	520	525	
ccc tct tcc cct gtt agc aat cct tcc cct gag tac act ggc ctc agc Pro Ser Ser Pro Val Ser Asn Pro Ser Pro Glu Tyr Thr Gly Leu Ser			1693
530	535	540	
act aca gga gca atg cag tct tac acg tgg tct cta aca tac aca gtg Thr Thr Gly Ala Met Gln Ser Tyr Thr Trp Ser Leu Thr Tyr Thr Val			1741
545	550	555	
acg acg gct gct ggg tcc cca gct gag aac tcc caa cag ctg ccc tgt Thr Thr Ala Ala Gly Ser Pro Ala Glu Asn Ser Gln Gln Leu Pro Cys			1789
560	565	570	
atg agg aac act cat gtg cct tct tcc gtc aca cac agg ata cca Met Arg Asn Thr His Val Pro Ser Ser Val Thr His Arg Ile Pro			1837
575	580	585	590
gtt tat ccc cac aga gag gaa cat gga tac acg gga agc tat aac tat Val Tyr Pro His Arg Glu Glu His Gly Tyr Thr Gly Ser Tyr Asn Tyr			1885
595	600	605	
ggg agc tat ggc aac cag cat cct cac ccc atg cag agc cag tat ccg Gly Ser Tyr Gly Asn Gln His Pro His Pro Met Gln Ser Gln Tyr Pro			1933
610	615	620	
gcc ctc cct cat gac aca gct atc tct ggg cca ctc cac tat gcc cct Ala Leu Pro His Asp Thr Ala Ile Ser Gly Pro Leu His Tyr Ala Pro			1981
625	630	635	
tac cac agg agc tct gca cag tac cct ttt aat agc ccc act tcc cg ^g Tyr His Arg Ser Ser Ala Gln Tyr Pro Phe Asn Ser Pro Thr Ser Arg			2029
640	645	650	
atg gaa cct tgt ttg atg agc agt act ccc aga ctg cat cct acc cca Met Glu Pro Cys Leu Met Ser Ser Thr Pro Arg Leu His Pro Thr Pro			2077
655	660	665	670
gtc act ccc cgc tgg cca gag gtg ccc tca gcc aac acg tgc tac aca Val Thr Pro Arg Trp Pro Glu Val Pro Ser Ala Asn Thr Cys Tyr Thr			2125
675	680	685	

agc ccg tct gtg cat tct gcg agg tac gga aac tct agt gac atg tat Ser Pro Ser Val His Ser Ala Arg Tyr Gly Asn Ser Ser Asp Met Tyr	2173
690 695 700	
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705 710 715	
ttt cct ggc ttt gct tac atc aac gga gag gcc tct aca gga tgg gct Phe Pro Gly Phe Ala Tyr Ile Asn Gly Glu Ala Ser Thr Gly Trp Ala	2269
720 725 730	
aaa tga ctgctatcat aggcattccat atttaatatt aataataata attaataata Lys	2325
735	
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tgacaaaatc tcttagtct tgaaggatgg atactggaga cagaatctgg tttgtgtct	2565
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His Thr Ser Leu Gly Asn Val Ser Asn Asp Glu Asn Glu Glu Lys Glu
35 40 45

Asn Asn Arg Ala Ser Lys Pro His Ser Thr Pro Ala Thr Leu Gln Trp
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Leu Glu Glu Asn Tyr Glu Ile Ala Glu Gly Val Cys Ile Pro Arg Ser
65 70 75 80

Ala Leu Tyr Met His Tyr Leu Asp Phe Cys Glu Lys Asn Asp Thr Gln
85 90 95

Pro Val Asn Ala Ala Ser Phe Gly Lys Ile Ile Arg Gln Gln Phe Pro
100 105 110

Gln Leu Thr Thr Arg Arg Leu Gly Thr Arg Gly Gln Ser Lys Tyr His
115 120 125

Tyr Tyr Gly Ile Ala Val Lys Glu Ser Ser Gln Tyr Tyr Asp Val Met
130 135 140

Tyr Ser Lys Lys Gly Ala Ala Trp Val Ser Glu Thr Gly Lys Lys Glu
145 150 155 160

Val Ser Lys Gln Thr Val Ala Tyr Ser Pro Arg Ser Lys Leu Gly Thr
165 170 175

Leu Leu Pro Glu Phe Pro Asn Val Lys Asp Leu Asn Leu Pro Ala Ser
180 185 190

Leu Pro Glu Glu Lys Val Ser Thr Phe Ile Met Met Tyr Arg Thr His
195 200 205

Cys Gln Arg Ile Leu Asp Thr Val Ile Arg Ala Asn Phe Asp Glu Val

210

215

220

Gln Ser Phe Leu Leu His Phe Trp Gln Gly Met Pro Pro His Met Leu
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Pro Val Leu Gly Ser Ser Thr Val Val Asn Ile Val Gly Val Cys Asp
245 250 255

Ser Ile Leu Tyr Lys Ala Ile Ser Gly Val Leu Met Pro Thr Val Leu
260 265 270

Gln Ala Leu Pro Asp Ser Leu Thr Gln Val Ile Arg Lys Phe Ala Lys
275 280 285

Gln Leu Asp Glu Trp Leu Lys Val Ala Leu His Asp Leu Pro Glu Asn
290 295 300

Leu Arg Asn Ile Lys Phe Glu Leu Ser Arg Arg Phe Ser Gln Ile Leu
305 310 315 320

Arg Arg Gln Thr Ser Leu Asn His Leu Cys Gln Ala Ser Arg Thr Val
325 330 335

Ile His Ser Ala Asp Ile Thr Phe Gln Met Leu Glu Asp Trp Arg Asn
340 345 350

Val Asp Leu Asn Ser Ile Thr Lys Gln Thr Leu Tyr Thr Met Glu Asp
355 360 365

Ser Arg Asp Glu His Arg Lys Leu Ile Thr Gln Leu Tyr Gln Glu Phe
370 375 380

Asp His Leu Leu Glu Glu Gln Ser Pro Ile Glu Ser Tyr Ile Glu Trp
385 390 395 400

Leu Asp Thr Met Val Asp Arg Cys Val Val Lys Val Ala Ala Lys Arg
405 410 415

Gln Gly Ser Leu Lys Lys Val Ala Gln Gln Phe Leu Leu Met Trp Ser
420 425 430

Cys Phe Gly Thr Arg Val Ile Arg Asp Met Thr Leu His Ser Ala Pro
435 440 445

Ser Phe Gly Ser Phe His Leu Ile His Leu Met Phe Asp Asp Tyr Val
450 455 460

Leu Tyr Leu Leu Glu Ser Leu His Cys Gln Glu Arg Ala Asn Glu Leu
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Met Arg Ala Met Lys Gly Glu Gly Ser Thr Ala Glu Val Arg Glu Glu
485 490 495

Ile Ile Leu Thr Glu Ala Ala Ala Pro Thr Pro Ser Pro Val Pro Ser
500 505 510

Phe Ser Pro Ala Lys Ser Ala Thr Ser Met Glu Val Pro Pro Pro Ser
515 520 525

Ser Pro Val Ser Asn Pro Ser Pro Glu Tyr Thr Gly Leu Ser Thr Thr
530 535 540

Gly Ala Met Gln Ser Tyr Thr Trp Ser Leu Thr Tyr Thr Val Thr Thr
545 550 555 560

Ala Ala Gly Ser Pro Ala Glu Asn Ser Gln Gln Leu Pro Cys Met Arg
565 570 575

Asn Thr His Val Pro Ser Ser Val Thr His Arg Ile Pro Val Tyr
580 585 590

Pro His Arg Glu Glu His Gly Tyr Thr Gly Ser Tyr Asn Tyr Gly Ser
595 600 605

Tyr Gly Asn Gln His Pro His Pro Met Gln Ser Gln Tyr Pro Ala Leu
610 615 620

Pro His Asp Thr Ala Ile Ser Gly Pro Leu His Tyr Ala Pro Tyr His
625 630 635 640

Arg Ser Ser Ala Gln Tyr Pro Phe Asn Ser Pro Thr Ser Arg Met Glu
645 650 655

Pro Cys Leu Met Ser Ser Thr Pro Arg Leu His Pro Thr Pro Val Thr
660 665 670

Pro Arg Trp Pro Glu Val Pro Ser Ala Asn Thr Cys Tyr Thr Ser Pro
675 680 685

Ser Val His Ser Ala Arg Tyr Gly Asn Ser Ser Asp Met Tyr Thr Pro
690 695 700

Leu Thr Thr Arg Arg Asn Ser Glu Tyr Glu His Met Gln His Phe Pro
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Met Leu Cys Gly Leu Leu Glu Glu
1 5

cct gac atg gat tcc aca gag agc tgg att gaa aga tgt ctg aac gaa 160
Pro Asp Met Asp Ser Thr Glu Ser Trp Ile Glu Arg Cys Leu Asn Glu
10 15 20

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agc gag agc aag cgc ttc tcc agc cac tct tct att gga aat att tcc      208
Ser Glu Ser Lys Arg Phe Ser Ser His Ser Ser Ile Gly Asn Ile Ser
25          30          35          40

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aac gac gaa aac gaa gag aag gaa aat aac cga gca tct aag cca cat 256
Asn Asp Glu Asn Glu Glu Lys Glu Asn Asn Arg Ala Ser Lys Pro His
45 50 55

tca aca cct gct aca tta caa tgg ttg gag gag aac tac gag atc gca	304
Ser Thr Pro Ala Thr Leu Gln Trp Leu Glu Glu Asn Tyr Glu Ile Ala	
60 65 70	

gag ggt gtg tgt att cct cgc atc gcc ctg tac atg cac tac ctg gac 352
 Glu Gly Val Cys Ile Pro Arg Ile Ala Leu Tyr Met His Tyr Leu Asp
 75 80 85

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ttc tgc gaa aaa ctg gac tca cag cca gtc aat gct gca agc ttc gga      400
Phe Cys Glu Lys Leu Asp Ser Gln Pro Val Asn Ala Ala Ser Phe Gly
   90          95           100

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aag ata ata agg cag cag ttt cct cag ttg acc acg cgg aga tta gga      448
Lys Ile Ile Arg Gln Gln Phe Pro Gln Leu Thr Thr Arg Arg Leu Gly
105          110          115          120

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act aga ggt caa tca aag tat cat tac tat ggc atc gca gtg aag gag 496
Thr Arg Gly Gln Ser Lys Tyr His Tyr Tyr Gly Ile Ala Val Lys Glu
125 130 135

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agc tcc cag tac tac gat gtg atg tac tct aaa aag ggc gct gcg tgg      544
Ser Ser Gln Tyr Tyr Asp Val Met Tyr Ser Lys Lys Gly Ala Ala Trp
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gtg aac gag acg ggc aag aaa gag gtc acc aaa cag aca gta gcg tat	592
Val Asn Glu Thr Gly Lys Lys Glu Val Thr Lys Gln Thr Val Ala Tyr	
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tca ccg cgc tcc aag ctg ggc act ctc ctg cca gac ttt cca aat gtc	640
Ser Pro Arg Ser Lys Leu Gly Thr Leu Leu Pro Asp Phe Pro Asn Val	
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aaa gac cta aat ctg ccc gcc agt ctg cca gag gag aag gtc tcg acc	688
Lys Asp Leu Asn Leu Pro Ala Ser Leu Pro Glu Glu Lys Val Ser Thr	
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ttt att atg atg tac aga act cac tgc cag agg ata ctg gat act gtc	736
Phe Ile Met Met Tyr Arg Thr His Cys Gln Arg Ile Leu Asp Thr Val	
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Val Asn Ile Val Gly Val Cys Asp Ser Ile Leu Tyr Lys Ala Ile Ser	
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Gly Val Leu Met Pro Thr Val Leu Gln Ala Leu Pro Asp Ser Leu Thr	
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275	280
cag gtg atc agg aag ttt gcc aag cag ctg gac gag tgg ctg aag gtg	976
Gln Val Ile Arg Lys Phe Ala Lys Gln Leu Asp Glu Trp Leu Lys Val	
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tca aga aga ttt tct cag att ctc aaa cga caa aca tca tta aac cac	1072
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Leu Cys Gln Ala Ser Arg Thr Val Ile His Ser Ala Asp Ile Thr Phe	
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Gln Met Leu Glu Asp Trp Arg Asn Val Asp Leu Asn Ser Ile Thr Lys	
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Ile Ile Gln Leu Tyr Gln Glu Phe Asp Arg Leu Leu Glu Asp Gln Ser	
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cca att gaa gcc tac atc gag tgg ctg gac tct atg gtg gag aga tgt Pro Ile Glu Ala Tyr Ile Glu Trp Leu Asp Ser Met Val Glu Arg Cys 395 400 405	1312
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gga tcc cag ctg tcc tgc atg aga ggc gga cct gcg tta cac gga tca Gly Ser Gln Leu Ser Cys Met Arg Gly Gly Pro Ala Leu His Gly Ser 570 575 580	1840
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Thr Pro Leu His Tyr Ser Ser Tyr His Arg Thr Ser Ala Gln Tyr Pro		
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Leu Asn Ser Gln Met Ser Arg Met Glu Ser Cys Leu Met Ser Gly Ser		
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Pro Leu Leu His Ser Ser Pro Val Thr Pro Arg Trp Pro Asp Val Pro		
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Ser Ala Asn Ser Cys Tyr Ser Ser Pro Thr Val His Ala Ser Arg Tyr		
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Ser Thr Gly Asp Met Tyr Ser Pro Leu Ala Pro Arg Arg Asn Ser Glu		
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Tyr Glu His Ala Gln His Phe Pro Gly Phe Ala Tyr Ile Asn Gly Glu		
715 720 725		
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Ala Thr Thr Gly Trp Ala Lys		
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Asn Asn Arg Ala Ser Lys Pro His Ser Thr Pro Ala Thr Leu Gln Trp
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Leu Glu Glu Asn Tyr Glu Ile Ala Glu Gly Val Cys Ile Pro Arg Ile
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Ala Leu Tyr Met His Tyr Leu Asp Phe Cys Glu Lys Leu Asp Ser Gln
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Pro Val Asn Ala Ala Ser Phe Gly Lys Ile Ile Arg Gln Gln Phe Pro
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Gln Leu Thr Thr Arg Arg Leu Gly Thr Arg Gly Gln Ser Lys Tyr His
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Tyr Tyr Gly Ile Ala Val Lys Glu Ser Ser Gln Tyr Tyr Asp Val Met
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Tyr Ser Lys Lys Gly Ala Ala Trp Val Asn Glu Thr Gly Lys Lys Glu
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Val Thr Lys Gln Thr Val Ala Tyr Ser Pro Arg Ser Lys Leu Gly Thr
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Leu Leu Pro Asp Phe Pro Asn Val Lys Asp Leu Asn Leu Pro Ala Ser
180 185 190

Leu Pro Glu Glu Lys Val Ser Thr Phe Ile Met Met Tyr Arg Thr His
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Cys Gln Arg Ile Leu Asp Thr Val Ile Arg Ala Asn Phe Asp Glu Val
210 215 220

Gln Ser Phe Leu Leu His Phe Trp Gln Gly Met Pro Pro His Met Leu
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Pro Val Leu Gly Ser Ser Thr Val Val Asn Ile Val Gly Val Cys Asp
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Ser Ile Leu Tyr Lys Ala Ile Ser Gly Val Leu Met Pro Thr Val Leu
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Gln Ala Leu Pro Asp Ser Leu Thr Gln Val Ile Arg Lys Phe Ala Lys
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Gln Leu Asp Glu Trp Leu Lys Val Ala Leu His Asp Leu Pro Glu Asn
290 295 300

Leu Arg Asn Ile Lys Phe Glu Leu Ser Arg Arg Phe Ser Gln Ile Leu
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Lys Arg Gln Thr Ser Leu Asn His Leu Cys Gln Ala Ser Arg Thr Val
325 330 335

Ile His Ser Ala Asp Ile Thr Phe Gln Met Leu Glu Asp Trp Arg Asn
340 345 350

Val Asp Leu Asn Ser Ile Thr Lys Gln Thr Leu Tyr Thr Met Glu Asp
355 360 365

Ser Arg Glu Asp Gln Arg Arg Leu Ile Ile Gln Leu Tyr Gln Glu Phe
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Asp Arg Leu Leu Glu Asp Gln Ser Pro Ile Glu Ala Tyr Ile Glu Trp
385 390 395 400

Leu Asp Ser Met Val Glu Arg Cys Val Val Arg Val Ala Gly Lys Arg
405 410 415

Pro Gly Ser Leu Lys Arg Val Ala Gln Gln Phe Leu Leu Met Trp Ser
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Cys Phe Gly Thr Arg Val Ile Arg Asp Met Thr Leu His Ser Ala Pro
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Ser Phe Gly Ser Phe His Leu Ile His Leu Met Phe Asp Asp Tyr Val
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Leu Tyr Leu Leu Glu Ser Leu His Cys Gln Glu Arg Ala Asn Glu Leu
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Met Arg Ala Met Lys Gly Glu Gly Ala Pro Ala Asp Thr Gly Glu Glu
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Leu Met Leu Met Ser Ser Thr Pro Thr Ser Thr Ser Pro Gly Pro Tyr
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Ser Pro Ala Lys Ser Val His Ser Val Gly Val Pro Ala Val Gly Ser
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Pro Asn Ser Ala Gln Ser Pro Glu Tyr Thr Ser Ile Ser Ala Thr Thr
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Gly Ala Val Gln Ser Tyr Thr Trp Ser Leu Thr Tyr Thr Val Thr Thr
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Ser Gly Gly Ser Pro Thr Glu Pro Gly Ser Gln Leu Ser Cys Met Arg
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Gly Gly Pro Ala Leu His Gly Ser Ser Ala His Arg Met Pro Val
580 585 590

Tyr Pro His Arg Asp Glu His Gly Tyr Thr Gly Ser Tyr Asn Tyr Ser
595 600 605

Ser Tyr Ala Asn Gln His His Ala Ile Gln Ser Gln Tyr Ser Ser
610 615 620

Leu Thr His Glu Ala Gly Leu Pro Thr Pro Leu His Tyr Ser Ser Tyr
625 630 635 640

His Arg Thr Ser Ala Gln Tyr Pro Leu Asn Ser Gln Met Ser Arg Met
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Glu Ser Cys Leu Met Ser Gly Ser Pro Leu Leu His Ser Ser Pro Val
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Thr Pro Arg Trp Pro Asp Val Pro Ser Ala Asn Ser Cys Tyr Ser Ser
675 680 685

Pro Thr Val His Ala Ser Arg Tyr Ser Thr Gly Asp Met Tyr Ser Pro
690 695 700

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Gly Phe Ala Tyr Ile Asn Gly Glu Ala Thr Thr Gly Trp Ala Lys
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<212> DNA
<213> *Mus musculus*

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agtcggaggg ctgggattgc gtcgctctga gcccccttt tcggaggcgg ctttttttat     180
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<210> 13
<211> 158
<212> PRT
<213> *Danio rerio*

<400> 13

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Trp Ile Glu Arg Cys Leu Asn Glu Ser Glu Ser Lys Arg Phe Ser Ser
20 25 30

His Ser Ser Ile Gly Asn Ile Ser Asn Asp Glu Asn Glu Glu Lys Glu
35 40 45

Asn Asn Arg Ala Ser Lys Pro His Ser Thr Pro Ala Thr Leu Gln Trp
50 55 60

Leu Glu Glu Asn Tyr Glu Ile Ala Glu Gly Val Cys Ile Pro Arg Ile
65 70 75 80

Ala Leu Tyr Met His Tyr Leu Asp Phe Cys Glu Lys Leu Asp Ser Gln

85

90

95

Pro Val Asn Ala Ala Ser Phe Gly Lys Ile Ile Arg Gln Gln Phe Pro
 100 105 110

Gln Leu Thr Thr Arg Arg Leu Gly Thr Arg Gly Gln Ser Lys Tyr His
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Tyr Tyr Gly Ile Ala Val Lys Glu Ser Ser Gln Tyr Tyr Asp Val Met
 130 135 140

Tyr Ser Lys Lys Gly Ala Ala Trp Val Asn Glu Thr Gly Lys
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<213> Homo sapiens

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 Met Asn Trp
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gct gcc ttc gga ggg tct gaa ttc ttc atc cca gaa ggc att cag ata 166
 Ala Ala Phe Gly Gly Ser Glu Phe Phe Ile Pro Glu Gly Ile Gln Ile
 5 10 15

gat tcg aga tgc cca cta agc aga aat atc acg gaa tgg tac cat tac 214
 Asp Ser Arg Cys Pro Leu Ser Arg Asn Ile Thr Glu Trp Tyr His Tyr
 20 25 30 35

tat ggc att gca gtg aaa gaa agc tcc caa tat tat gat gtg atg tat 262
 Tyr Gly Ile Ala Val Lys Glu Ser Ser Gln Tyr Tyr Asp Val Met Tyr
 40 45 50

tcc aag aaa gga gct gcc tgg gtg agt gag acg ggc aag aaa gaa gtg 310
 Ser Lys Lys Gly Ala Ala Trp Val Ser Glu Thr Gly Lys Lys Glu Val
 55 60 65

agc aaa cag aca gtg gca tat tca ccc cgg tcc aaa ctc gga aca ctg 358
 Ser Lys Gln Thr Val Ala Tyr Ser Pro Arg Ser Lys Leu Gly Thr Leu
 70 75 80

ctg cca gaa ttt ccc aat gtc aaa gat cta aat ctg cca gcc agc ctg 406
 Leu Pro Glu Phe Pro Asn Val Lys Asp Leu Asn Leu Pro Ala Ser Leu
 85 90 95

cct gag gag aag gtt tct acc ttt att atg atg tac aga aca cac tgt 454

Pro Glu Glu Lys Val Ser Thr Phe Ile Met Met Tyr Arg Thr His Cys				
100	105	110	115	
cag aga ata ctg gac act gta ata aga gcc aac ttt gat gag gtt caa				502
Gln Arg Ile Leu Asp Thr Val Ile Arg Ala Asn Phe Asp Glu Val Gln				
120	125	130		
agt ttc ctt ctg cac ttt tgg caa gga atg ccg ccc cac atg ctg cct				550
Ser Phe Leu Leu His Phe Trp Gln Gly Met Pro Pro His Met Leu Pro				
135	140	145		
gtg ctg ggc tcc tcc acg gtg gtg aac att gtc ggc gtg tgt gac tcc				598
Val Leu Gly Ser Ser Thr Val Val Asn Ile Val Gly Val Cys Asp Ser				
150	155	160		
atc ctc tac aaa gct atc tcc ggg gtg ctg atg ccc act gtg ctg cag				646
Ile Leu Tyr Lys Ala Ile Ser Gly Val Leu Met Pro Thr Val Leu Gln				
165	170	175		
gca tta cct gac agc tta act cag gtg att cga aag ttt gcc aag caa				694
Ala Leu Pro Asp Ser Leu Thr Gln Val Ile Arg Lys Phe Ala Lys Gln				
180	185	190	195	
ctg gat gag tgg cta aaa gtg gct ctc cac gac ctc cca gaa aac ttg				742
Leu Asp Glu Trp Leu Lys Val Ala Leu His Asp Leu Pro Glu Asn Leu				
200	205	210		
cga aac atc aag ttc gaa ttg tcg aga agg ttc tcc caa att ctg aga				790
Arg Asn Ile Lys Phe Glu Leu Ser Arg Arg Phe Ser Gln Ile Leu Arg				
215	220	225		
cgg caa aca tca cta aat cat ctc tgc cag gca tct cga aca gtg atc				838
Arg Gln Thr Ser Leu Asn His Leu Cys Gln Ala Ser Arg Thr Val Ile				
230	235	240		
cac agt gca gac atc acg ttc caa atg ctg gaa gac tgg agg aac gtg				886
His Ser Ala Asp Ile Thr Phe Gln Met Leu Glu Asp Trp Arg Asn Val				
245	250	255		
gac ctg aac agc atc acc aag caa acc ctt tac acc atg gaa gac tct				934
Asp Leu Asn Ser Ile Thr Lys Gln Thr Leu Tyr Thr Met Glu Asp Ser				
260	265	270	275	
cgc gat gag cac cgg aaa ctc atc acc caa tta tat cag gag ttt gac				982
Arg Asp Glu His Arg Lys Leu Ile Thr Gln Leu Tyr Gln Glu Phe Asp				
280	285	290		
cat ctc ttg gag gag cag tct ccc atc gag tcc tac att gag tgg ctg				1030
His Leu Leu Glu Glu Gln Ser Pro Ile Glu Ser Tyr Ile Glu Trp Leu				
295	300	305		
gat acc atg gtt gac cgc tgt gtt gtg aag gtg gct gcc aag aga caa				1078
Asp Thr Met Val Asp Arg Cys Val Val Lys Val Ala Ala Lys Arg Gln				
310	315	320		
ggg tcc ttg aag aaa gtg gcc cag cag ttc ctc ttg atg tgg tcc tgt				1126
Gly Ser Leu Lys Lys Val Ala Gln Gln Phe Leu Leu Met Trp Ser Cys				
325	330	335		
ttc ggc aca agg gtg atc cgg gac atg acc ttg cac agc gcc ccc agc				1174
Phe Gly Thr Arg Val Ile Arg Asp Met Thr Leu His Ser Ala Pro Ser				

340	345	350	355	
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				1270
tac ctg tta gaa tct ctg cac tgt cag gag cg ^g gcc aat gag ctc atg Tyr Leu Leu Glu Ser Leu His Cys Gln Glu Arg Ala Asn Glu Leu Met				375 380 385
				1318
cga gcc atg aag gga gaa gga agc act gca gaa gtc cga gaa gag atc Arg Ala Met Lys Gly Glu Gly Ser Thr Ala Glu Val Arg Glu Glu Ile				390 395 400
				1366
atc ttg aca gag gct gcc gca cca acc cct tca cca gtg cca tcg ttt Ile Leu Thr Glu Ala Ala Ala Pro Thr Pro Ser Pro Val Pro Ser Phe				405 410 415
				1414
tct cca gca aaa tct gcc aca tct gtg gaa gtg cca cct ccc tct tcc Ser Pro Ala Lys Ser Ala Thr Ser Val Glu Val Pro Pro Pro Ser Ser				420 425 430 435
				1462
cct gtt agc aat cct tcc cct gag tac act ggc ctc agc act aca gga Pro Val Ser Asn Pro Ser Pro Glu Tyr Thr Gly Leu Ser Thr Thr Gly				440 445 450
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gca atg cag tct tac acg tgg tct cta aca tac aca gtg acg acg gct Ala Met Gln Ser Tyr Thr Trp Ser Ileu Thr Tyr Thr Val Thr Thr Ala				455 460 465
				1558
gct ggg tcc cca gct gag aac tcc caa cag ctg ccc tgt atg agg aac Ala Gly Ser Pro Ala Glu Asn Ser Gln Gln Leu Pro Cys Met Arg Asn				470 475 480
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act cat gtg cct tct tcc tcc gtc aca cac agg ata cca gtt tat ccc Thr His Val Pro Ser Ser Val Thr His Arg Ile Pro Val Tyr Pro				485 490 495
				1654
cac aga gag gaa cat gga tac acg gga agc tat aac tat ggg agc tat His Arg Glu Glu His Gly Tyr Thr Gly Ser Tyr Asn Tyr Gly Ser Tyr				500 505 510 515
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ggc aac cag cat cct cac ccc atg cag agc cag tat ccg gcc ctc cct Gly Asn Gln His Pro His Pro Met Gln Ser Gln Tyr Pro Ala Leu Pro				520 525 530
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agc tct gca cag tac cct ttt aat agc ccc act tcc cg ^g atg gaa cct Ser Ser Ala Gln Tyr Pro Phe Asn Ser Pro Thr Ser Arg Met Glu Pro				550 555 560
				1846
tgt ttg atg agc agt act ccc aga ctg cat cct acc cca gtc act ccc Cys Leu Met Ser Ser Thr Pro Arg Leu His Pro Thr Pro Val Thr Pro				565 570 575
				1894
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630 635 640	
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<213> Homo sapiens

<400> 15

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Ile Gln Ile Asp Ser Arg Cys Pro Leu Ser Arg Asn Ile Thr Glu Trp
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Tyr His Tyr Tyr Gly Ile Ala Val Lys Glu Ser Ser Gln Tyr Tyr Asp
35 40 45

Val Met Tyr Ser Lys Lys Gly Ala Ala Trp Val Ser Glu Thr Gly Lys
50 55 60

Lys Glu Val Ser Lys Gln Thr Val Ala Tyr Ser Pro Arg Ser Lys Leu
65 70 75 80

Gly Thr Leu Leu Pro Glu Phe Pro Asn Val Lys Asp Leu Asn Leu Pro
85 90 95

Ala Ser Leu Pro Glu Glu Lys Val Ser Thr Phe Ile Met Met Tyr Arg
100 105 110

Thr His Cys Gln Arg Ile Leu Asp Thr Val Ile Arg Ala Asn Phe Asp
115 120 125

Glu Val Gln Ser Phe Leu Leu His Phe Trp Gln Gly Met Pro Pro His
130 135 140

Met Leu Pro Val Leu Gly Ser Ser Thr Val Val Asn Ile Val Gly Val
145 150 155 160

Cys Asp Ser Ile Leu Tyr Lys Ala Ile Ser Gly Val Leu Met Pro Thr
165 170 175

Val Leu Gln Ala Leu Pro Asp Ser Leu Thr Gln Val Ile Arg Lys Phe
180 185 190

Ala Lys Gln Leu Asp Glu Trp Leu Lys Val Ala Leu His Asp Leu Pro
195 200 205

Glu Asn Leu Arg Asn Ile Lys Phe Glu Leu Ser Arg Arg Phe Ser Gln
210 215 220

Ile Leu Arg Arg Gln Thr Ser Leu Asn His Leu Cys Gln Ala Ser Arg
225 230 235 240

Thr Val Ile His Ser Ala Asp Ile Thr Phe Gln Met Leu Glu Asp Trp
245 250 255

Arg Asn Val Asp Leu Asn Ser Ile Thr Lys Gln Thr Leu Tyr Thr Met
260 265 270

Glu Asp Ser Arg Asp Glu His Arg Lys Leu Ile Thr Gln Leu Tyr Gln
275 280 285

Glu Phe Asp His Leu Leu Glu Glu Gln Ser Pro Ile Glu Ser Tyr Ile
290 295 300

Glu Trp Leu Asp Thr Met Val Asp Arg Cys Val Val Lys Val Ala Ala
305 310 315 320

Lys Arg Gln Gly Ser Leu Lys Lys Val Ala Gln Gln Phe Leu Leu Met
325 330 335

Trp Ser Cys Phe Gly Thr Arg Val Ile Arg Asp Met Thr Leu His Ser
340 345 350

Ala Pro Ser Phe Gly Ser Phe His Leu Ile His Leu Met Phe Asp Asp
355 360 365

Tyr Val Leu Tyr Leu Leu Glu Ser Leu His Cys Gln Glu Arg Ala Asn
370 375 380

Glu Leu Met Arg Ala Met Lys Gly Glu Gly Ser Thr Ala Glu Val Arg
385 390 395 400

Glu Glu Ile Ile Leu Thr Glu Ala Ala Ala Pro Thr Pro Ser Pro Val
405 410 415

Pro Ser Phe Ser Pro Ala Lys Ser Ala Thr Ser Val Glu Val Pro Pro
420 425 430

Pro Ser Ser Pro Val Ser Asn Pro Ser Pro Glu Tyr Thr Gly Leu Ser
435 440 445

Thr Thr Gly Ala Met Gln Ser Tyr Thr Trp Ser Leu Thr Tyr Thr Val
450 455 460

Thr Thr Ala Ala Gly Ser Pro Ala Glu Asn Ser Gln Gln Leu Pro Cys
 465 470 475 480

Met Arg Asn Thr His Val Pro Ser Ser Ser Val Thr His Arg Ile Pro
 485 490 495

Val Tyr Pro His Arg Glu Glu His Gly Tyr Thr Gly Ser Tyr Asn Tyr
 500 505 510

Gly Ser Tyr Gly Asn Gln His Pro His Pro Met Gln Ser Gln Tyr Pro
 515 520 525

Ala Leu Pro His Asp Thr Ala Ile Ser Gly Pro Leu His Tyr Ala Pro
 530 535 540

Tyr His Arg Ser Ser Ala Gln Tyr Pro Phe Asn Ser Pro Thr Ser Arg
 545 550 555 560

Met Glu Pro Cys Leu Met Ser Ser Thr Pro Arg Leu His Pro Thr Pro
 565 570 575

Val Thr Pro Arg Trp Pro Glu Val Pro Ser Ala Asn Thr Cys Tyr Thr
 580 585 590

Ser Pro Ser Val His Ser Ala Arg Tyr Gly Asn Ser Ser Asp Met Tyr
 595 600 605

Thr Pro Leu Thr Thr Arg Arg Asn Ser Glu Tyr Glu His Met Gln His
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Phe Pro Gly Phe Ala Tyr Ile Asn Gly Glu Ala Ser Thr Gly Trp Ala
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23

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<210> 32
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<212> PRT
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1 5 10

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<212> PRT
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Met Leu Cys Gly Leu Leu Glu Glu Pro Asp Met Asp Ser Thr
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